

CLAIMS

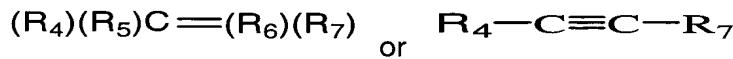
1. A monovalent copper(+1)(β -diketonate)(L) or monovalent copper(+1)(β -ketoiminate)(L) complex represented by the formula:



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wherein X represents O or NR₉ wherein R₁ and R₃ are each independently comprised of the group C₁₋₈ alkyl, C₁₋₈ fluoroalkyl, aryl, C₁₋₈ alkoxy, and C₁₋₈ alkyl ethers and R₂ is H, C₁₋₈ alkyl, C₁₋₈ alkoxy, and halogen, R₉ is C₁₋₈ alkyl, C₁₋₈ fluoroalkyl, phenyl, alkylphenyl, trialkylsilyl, and L represents a ligand having the structure:

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wherein R₄ is comprised of the group C₁₋₈ alkanol, C₁₋₈ alkoxyalkanol, C₁₋₈ unsaturated alkoxyalkanol, trialkylsilanol, C₁₋₈ alkylamine, phenylamine; R₅, R₆, and R₇ are comprised of the group H, C₁₋₈ alkyl, trialkylsilyl, alkoxy or phenyl.

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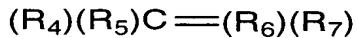
2. The complex of Claim 1 wherein X is O.

3. The complex of Claim 2 wherein R₁ and R₃ are selected from the group consisting of C₁₋₃ alkyl and C₁₋₃ fluoroalkyl.

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4. The complex of Claim 3 wherein R₂ is H.

5. The complex of Claim 4 wherein L is represented by the formula:



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6. The complex of Claim 5 wherein R₄ is (CH₃)₂COH.

7. The complex of Claim 6 wherein R₅, R₆, and R₇ are H.

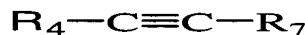
8. The complex of Claim 7 wherein R₁ and R₃ are CF₃.

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9. The complex of Claim 2 wherein β -diketonate portion of the compound is derived from a β -diketone selected from the group consisting of 1,1,1,5,5,5-hexafluoro-2,4-pentanedione; 4-(2,2,2-trifluoroethyl)imino-1,1,1,5,5,5-hexafluoro-2-pentanone; 5-(2,2,2-trifluoroethyl)imino-1,1,1,2,2,6,6,6-octafluoro-3-hexanone, and 6-(2,2,2-trifluoroethyl)imino-1,1,1,2,2,3,3,7,7,7,-decafluoro-4-heptanone.

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10. The complex of Claim 4 wherein L is represented by the formula:



10 11. The complex of Claim 10 wherein R_4 is CH_2OH .

12. The complex of Claim 11 wherein R_7 is H.

13. The complex of Claim 12 wherein R_1 and R_3 are CF_3 .

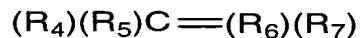
15 14. The complex of Claim 9 wherein the β -diketonate portion is derived from 1,1,1,5,5,5-hexafluoro-2,4-pentanedione and the ligand L is derived from 2-methyl 3-buten-2-ol.

20 15. The complex of Claim 1 wherein X is NR_9

16. The complex of Claim 15 wherein R_1 and R_3 are selected from the group consisting of C_{1-3} alkyl and C_{1-3} fluoroalkyl and R_2 is H.

25 17. The complex of Claim 16 wherein R_9 is C_{1-3} fluoroalkyl.

18. The complex of Claim 17 wherein L is represented by the formula:



30 19. The complex of Claim 18 wherein R_4 is $(CH_3)_2COH$ and R_5 , R_6 , and R_7 are H.

20. In a process for the chemical vapor deposition of copper metal on metallic substrates or electrically conducting portions of a substrate using organometallic copper compounds, the improvement which comprises using the monovalent copper complex of Claim 1 as the organometallic copper compound.

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